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Ganong's Plant Physiology.¹—Notwithstanding the recognized importance of plant physiology as a source of illuminating information on the conduct of living things, as well as a valuable means of discipline, the very scanty assortment of English texts available for classes taking up this study has been a source of inconvenience to many teachers. Laboratory manuals and concise, up-to-date treatises on the subject have both been conspicuously lacking.

Fortunately, several additions to our texts on this subject have recently been made; among these *A Laboratory Course in Plant Physiology*, by Prof. W. F. Ganong of Smith College (New York, Henry Holt & Co., 1901), outlines a series of experiments covering a school year in which eight hours are given weekly for laboratory work. Dr. Ganong has chosen experiments for their teaching value, making use of those, so far as possible, which require simple apparatus, purchasable at small expense. Inspection of the figures and descriptions given discovers much ingenuity in this selection. Since Dr. Ganong believes that in elementary courses "it is mainly qualitative results that are of value," although "the exact quantitative methods and spirit are scientifically and educationally the best," the correct use of simple apparatus is emphasized. Comment upon the experiments is chiefly by the way of suggesting to the student lines of thought and reading. When experiment is out of the question proportion is secured by references for outside reading. Much use of synoptical essays is recommended.

The suggestions are, in most cases, stimulating and within the range of the possible. When, however, the student is directed to form a clear mental picture of the molecular processes and energy involved in osmosis, one cannot refrain from asking whether the picture is to be that in the mind of Graham or that in the mind of van't Hoff. When physicists are still divided on the subject the undergraduate deceives himself who fancies that he has the data necessary for the formation of a clear mental picture.

The book is clearly the result of careful work and ample experience. It cannot but be of the greatest assistance to the teachers of plant physiology, and it deserves to be most cordially received.

R. H. T.

Notes.—Part I of a botany of the Faeröes, based upon Danish investigations, has been published, by aid of the Carlsberg fund, by

¹Ganong, W. F. *A Laboratory Course in Plant Physiology, especially as a Basis of Ecology*. New York, Henry Holt & Co., 1901. 8vo, vi-146 pp., 35 figs.

the Nordiske Forlag of Copenhagen. Dr. Warning contributes the historical introduction, and systematic and ecological discussions are given of all but the marine algæ, which, with a comparison of land and sea vegetation and certain economic discussions, is reserved for a concluding part.

The Congo Museum of Brussels has commenced the publication, as a series of its *Annales*, of a systematic enumeration of the Congo plants collected in 1895-96 by Dewèvre. The descriptions are by De Wildeman and Durand.

Some botanical matter of interest to students of our northern vegetation is contained in No. 21 of *North American Fauna*, referring to the natural history of the Queen Charlotte Islands and the Cook Inlet region.

The willows of Alaska are discussed by Coville in the *Proceedings of the Washington Academy of Sciences*, under date of August 23.

Part VI of Dr. Rydberg's "Studies on the Rocky Mountain Flora," in the September *Bulletin of the Torrey Botanical Club*, contains a considerable number of new species, chiefly gamopetalous.

A second part of Barber's "Flora der Oberlausitz" is contained in Vol. XXIII of the *Abhandlungen der Naturforschenden Gesellschaft zu Görlitz*.

Professor Arechavaleta's flora of Uruguay, in course of publication in the *Anales del Museo Nacional de Montevideo*, has reached the group Mimoseæ.

A number of papers on the phanerogamic flora of Java, by Koorders, are contained in Vol. LX of the *Natuurkundig Tijdschrift voor Nederlandsch-Indië*.

The holly-leaved barberries, constituting the genus *Mahonia*, are revised by Fedde in the opening number of Vol. XXXI of Engler's *Botanische Jahrbücher*, which also contains a monograph of the orchid group Diseæ, by Schlechter.

The signatures of Vol. IV of *Pittonia*, issued September 30, contain descriptions of a number of violets and crucifers, by Professor Greene.

The origin of *Liriodendron stipules* is discussed by E. W. Berry in the *Bulletin of the Torrey Botanical Club* for September.

Hybrid currants are discussed by Janczewski in the July *Bulletin International de l'Académie des Sciences de Cracovie*.

A monograph of the genus *Sorbus*, by Hedlund, is reprinted from Vol. XXXV of the *K. Svenska Vetenskaps-Akademiens Handlingar*.

The chemistry of the bark of *Robinia pseudacacia*, by Power, and the anatomy of the bark of the same species, by Perrédès, form the subject of Nos. 20 and 21 of the *Publications of the Wellcome Chemical Research Laboratories* of London. A paper by von Schrenk, on the decay of the wood of the same tree, induced by *Polyporus rimosus*, has been separately printed from the *Twelfth Report of the Missouri Botanical Club*.

Dr. Heyl, of Darmstadt, has distributed a paper, "Ueber das Vorkommen von Alkaloiden und Saponinen in Cacteen," from the June Heft of the *Archiv der Pharmazie*. *Pilocereus sargentianus*, *Cereus pecten-aboriginum*, and *C. gummosus* were studied.

Professor Hume publishes an interesting account of *Citrus decumana* as *Bulletin 58 of the Florida Experiment Station*.

Aligera patelliformis and *Collinsia breviflora*, from California, are described in *The West American Scientist* for August, by Suksdorf.

Agave langlassei is the name applied by André, in the *Revue Horticole* for August, to a species of Manfreda from the Pacific slope of Mexico.

Professor Nelson publishes an economic treatise on the species of *Bromus* occurring in Wyoming, in *Bulletin No. 46 of the Wyoming Experiment Station*.

In a paper published as No. 3 of the current volume of *Proceedings of the California Academy of Sciences* Professor Peirce discusses the curious etiolated suckers which are sometimes produced by *Sequoia sempervirens*.

Separates of a paper on hybrid conifers, by Dr. Masters, have been distributed from the *Journal of the Royal Horticultural Society*.

Dr. E. F. Smith publishes an extended account of the cultural characters of four species of *Pseudomonas* of economic importance, in *Bulletin No. 28 of the Division of Vegetable Physiology and Pathology of the United States Department of Agriculture*.

In a paper reprinted from the *Proceedings of the Indiana Academy of Science* for 1900, Professor Arthur reaches the conclusion that the "cedar-apple" fungi, usually known by the generic name *Gymnosporangium*, should really be called *Tremella*, and he consequently

renames them under this genus, — without, however, considering the nomenclature of the many fungi usually treated as constituting the latter.

A revision of North American puffballs of the group *Tylostomaceæ*, by V. S. White, appears in the *Bulletin of the Torrey Botanical Club* for August.

A revision of the genus *Tilletia*, by Masee, is contained in the *Kew Bulletin of Miscellaneous Information* for 1899.

Professor Bailey contributes to *The World's Work* for September an illustrated account of Luther Burbank's work as a plant breeder.

Current numbers of the *Revue Générale de Botanique* contain a treatise by Jumelle on the rubber plants of northeastern Madagascar.

Raphia bast, much used by florists, is considered at length in a paper by Sadebeck, reprinted from Vol. XVIII of the *Jahrbuch der Hamburgischen Wissenschaftlichen Anstalten*.

An illustrated paper on the anatomy of the cocoanut, by Winton, is published in the October number of *The American Journal of Science*.

The weeds of Montana are treated by Professor Blankinship in *Bulletin No. 30* of the Experiment Station of that state.

Dr. Willis, director of the gardens, has begun the publication of an irregular-period journal under the title *Annals of the Royal Botanic Gardens, Peradeniya*. The first number, issued in June last, contains a brief history of the gardens and an account of the facilities offered for research.

Volume VIII of the *Proceedings of the Iowa Academy of Sciences* contains the following botanical articles: Graw, "Preliminary List of the Flowering Plants of Adair County"; Fitzpatrick, "Juglandaceæ, Betulaceæ, and Fagaceæ of Iowa"; Mueller, "Shrubs and Trees of Madison County"; Pammel, "Thistles of Iowa, with notes on a few other species"; Faurot, "Notes on the Early Development of *Astragalus caryocarpus*."

The initial numbers of the *Bulletin du Jardin Impérial Botanique de St.-Petersbourg* are largely concerned with fungi and lichens. The Russian text is accompanied by abstracts in French.

An account of the Geneva meeting of the newly organized Association Internationale des Botanistes is printed in the current volume of the *Bulletin de l'Herbier Boissier*.

The World's Work for September contains an illustrated account of the Arnold Arboretum, by Sylvester Baxter.

A little handbook of nature-teaching based upon the general principles of agriculture, by Francis Watts, has been prepared at the wish of Commissioner Morris, of the Imperial Department of Agriculture for the British West Indies, and is printed by Messrs. Dulau & Co., of London.

Some phases of the conflicting interests of people who are trying to teach city pupils about nature, and those who are trying to preserve natural objects, are well presented in an article by Mrs. Britton in *Torrey* for August.

A suggestive essay entitled "How shall a Young Person study Botany?" by Professor Beal, is reprinted from the *Proceedings* of last winter's conference of the New York State Science Teachers' Association.

Another of the interesting and well illustrated memoirs on plant ecology that the *Botanical Gazette* is bringing out is by Professor Bray, and deals with western Texas.

Phytogeographic nomenclature, discussed by Flahault in the July *Bulletin of the Torrey Botanical Club*, was the subject of an extended paper by Clements at the recent Denver meetings.

A paper on some changes effected in plants by frost is published by Lapeyrère in the current volume of the *Bulletin de la Société de Borda*, of Dax.

An essay on old herbaria, by Matouschek, is printed in Vol. XXXII of the *Mittheilungen aus dem Vereine der Naturfreunde in Reichenberg* for 1901.